UNITED STATES PATENT AND TRADEMARK OFFICE
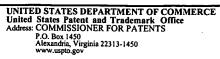
APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/694,455	10/23/2000	Joan LaVerne Mitchell	BDL9-2000-0064	9598

7590 05/25/2004		EXAMINER
David W. Lynch		WU, JINGGE

David W. Lynch
Crawford Maunu PLLC
1270 Northland Drive, Suite 390
Mendota Heights, MN 55120

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 05/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2004*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-81* is/are pending in the application.

    4a) Of the above claim(s) *1-16 and 34-81* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *17-20, 22, 27 and 33* is/are rejected.

7)☐ Claim(s) *21, 23-26, 28-32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Response to Amendment

1.   Applicants' response to the last Office Action, filed on March 11, 2004 has been entered and made of record.

Remarks

2.   Applicant's arguments with respect to claims 17-19, 27, and 33 regarding to Mukherjee have been fully considered, but they are not persuasive.

a. Applicant argues that Mukherjee does not teach, discloses or suggest "reducing errors of transform by testing at least one number resulting form an incremental calculation of transform coefficients during a transform" because Mukherjee does not discuss error in any other part of the article except in page 26 where Mukherjee only mentions "... it follows form Parseval's relationship that the squared magnitude error in quantization of the vectors contribut additively to the reconstruction mean-squared-error".

However, in response to applicant's argument, Examiner would like to point out that claim language is given its broadest reasonable interpretation. In the instant case, first, Mukherjee mentions "[c]oding results are presented to demonstrated that the vector-based approach (without arithmetic coding) surpass the scalar counterpart (also without arithmetic coding), in the mean-squared-error sense, for most image at low bitrates." (abstract). In addition, Mukeherjee teaches "...a higher magnitude vector when transmitted losslessly, will **reduce the reconstruction mean-squared error** more than a lower magnitude coefficient, and therefore should be quantized before the other." (page 26 left column, last paragraph, emphasis by the Examiner). Thus, Mukhejee tests (thresholding) the coefficients to determine the significance of vectors (see fig. 3)

so that "[e]ach new pass yields a new set of vectors which have magnitudes higher than the threshold associated the pass." (page 26 left column, second paragraph), and quantized the significant coefficients first to reduce the error.

b. Applicant further argues that Mukherjee does not teach "a corrective action based on the testing and performing the corrective action when a corrective action is determined to be needed" because Mukherjee acknowledges that a drawback to its teaching is that too many bits may be unnecessarily spent in quantizing insignificant vectors." Also, "[c]orrective action in the instant application includes, for example, an abort procedure where "[t]h abort procedure is used to determine when a calculation can be determined before its completion to save cycles. When the result of the calculation is projected to be too small. So that It twill be quantized to zero" see application page 19, line 19-22.

In response to applicant's argument, Examiner would like to point out that claim language is given its broadest reasonable interpretation. The specification is not measure of invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art. Ir re Sporck, 55CCPA 743, 386 F. 2d 924, 155 USPQ 687 (1968). In the instant case, first, the claimed language does not define the "corrective action". Thus, the limitations such as abort procedure contained in the specification can not be read into the claims for the purpose of avoiding the prior art Mukherjee. Second, the corrective action in Mukhejee is the threshoding procedure for each pass, in which "each pass ascertains as significant the set of vectors that lie within a HV-dimensional shell", and "[e]ach new pass yields a new set of vectors which have magnitudes higher than the threshold associated the pass." (page 26 left column, second paragraph). Thus, it is inherent that the vectors that have magnitudes lower than the threshold in the pass will be thresholded to zero, i.e. not appear in the pass.

Clearly, the thresholding procedure has two steps of testing (comparing coefficients to

the threshold) and corrective action (zeroing the coefficients less than the threshold),

which is read on the claim language.

Finally, Reuman is nonly cited to show that using a refinement matrix to reduce

lock effects (errors) is well known in the art.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 17-19, 27 and 33 are rejected under 35 U.S.C. 102(b) as being

anticipated by the article "Vector set partitioning with classified successive refinement

VQ for embedded wavelet image coding" to Mukherjee et al.

As to claim 17, Mukherkee discloses a data compression system, comprising:

a transformer (wavelet transform) for applying a linear analysis to de-correlate

data into transform coefficients using transform equations (page 25 section 2+, note that

the wavelet transform is to de-correlate data into transform coefficients using transform

equations);

reducing errors (abstract, page 26, reducing the mean squared errors) of the

transform by testing at least one number of transform coefficients (thresholding is the

test, i.e. comparing coefficients to the threshold) resulting form an incremental

calculation of transform coefficients (refinement passes) (page 26, section 2.1-2.2); and

determining (threshold procedure) whether to perform a corrective action

(thresholding) based on the test and performing the corrective action when a corrective

action is determined to be needed ((keep the coefficients higher than the threshold, and

setting zero for the coefficients less than the threshold) (page 26, see remarks).

As to claim 18, Mukherkee further discloses a quantizer for quantizing the

transform data to reducing a number of bits needed to represent the coefficients (page

28 section 3).

As to claim 19, Mukherkee further discloses whether the incremental calculation

(refinement pass)of the transform coefficients will result in transform coefficients with

unacceptable precision and performs corrective action by refining the at least one

number (page 26, section 2.1-2.2).

As to claims 27 and 33, Mukherkee further discloses determining whether to

perform a corrective action by determining whether an error resulting from terminating

the incremental calculation is acceptable (thresholding) and performs corrective action

by aborting (setting coefficients less than threshold to zero) the calculation of a

transform coefficient (page 26).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukeherkee in view of US 5629778 to Reuman.

As to claim 20, Mukherkee further discloses all limitations except refinement matrix.

Reuman, in an analogous environment, discloses a refinement matrix (quantization –error matrix) to reduce the block effects of transform coding (abstract, col. 5 line 4-col. 6 line 34).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the matrix of Reuman in the system of Mukherkee in order to compensate the error of transform coding (Reuman, col. 3).

As to claim 22, Reuman further discloses the refinement matrix is based on approximately calculated transform constants (abstract, col. 5 line 4-col. 6 line 34).

Allowable Subject Matter

7.   Claims 21 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 23-26 and 29-32 depend from claims 21 and 28 respectively, therefore, are objected.

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Contact Information

9.   Any inquiry concerning this communication or earlier communications should be

directed to Jingge Wu whose telephone number is (703) 308-9588. He can normally be

reached Monday through Thursday from 8:00 am to 5:30 pm. The examiner can be

also reached on second alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should

be directed to TC customer service whose telephone number is (703) 306-0377.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's

supervisor, Amelia Au, can be reached at (703) 308-6604.

The Working Group Fax number is (703) 872-9314.

Jingge Wu
Primary Patent Examiner